General

Guideline Title

Clinical practice guidelines for the management of rotator cuff syndrome in the workplace.

Bibliographic Source(s)

Hopman K, Krahe L, Lukersmith S, McColl AR, Vine K. Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. Port Macquarie (Australia): University of New South Wales; 2013. 80 p. [223 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Levels of evidence (I-IV) and grades of recommendation (A-D, Consensus, Mandatory) are defined at the end of the "Major Recommendations" field.

Initial Presentation

Clinical History

Recommendation 1. Diagnosis of rotator cuff syndrome requires a thorough history-taking which should include the following factors and consideration of their implications (refer to Table 2 in the original guideline document for indicators identified in the clinical history to assist assessment and differential diagnosis):

- Age
- Occupation and sports participation
- Medical history
- Mechanism of injury
- Pain symptoms
- Weakness and/or loss of range of motion (body function impairments)
- Activity limitations
- Social situation

(Grade: Consensus)

Physical Examination

Recommendation 2. Assessment of rotator cuff syndrome requires physical examination which should include: direct observation of the shoulder and scapula; assessment of active and passive range of motion; resisted (isometric) strength testing; and evaluation of the cervical and thoracic spine (as indicated). It may also include administration of other clinical tests but these are dependent upon the experience and preference of the clinician. (Grade: Consensus)

Identification of Red Flags

Recommendation 3. The clinician must exclude 'red flags' in the diagnosis of rotator cuff syndrome. 'Red flags' are signs and symptoms which suggest serious pathology (see Figure 1 in the original guideline document).

The following 'red flags' may present as shoulder pain and/or loss of function:

- Unexplained deformity or swelling or erythema of the skin
- Significant weakness not due to pain
- Past history of malignancy
- Suspected malignancy (e.g., weight loss or loss of appetite)
- Fevers/chills/malaise
- Significant unexplained sensory/motor deficits
- Pulmonary or vascular compromise

(Grade: Consensus)

Identification of Yellow Flags

Recommendation 4. The clinician should take note of 'yellow flags' discussed or identified during history-taking. Yellow flags are contextual factors such as personal, psychosocial, or environmental factors that could impact on recovery and/or return to work (RTW) following injury (see Appendix 1 of the original guideline document). (Grade: Consensus)

Limitations of Imaging in Early Presentations

Recommendation 5. X-rays and imaging are not indicated in the first four to six weeks for an injured worker presenting with suspected rotator cuff syndrome in the absence of 'red flags' (see Figure 1 in the original guideline document). (Grade: C)

Recommendation 6. Clinicians will educate injured workers with suspected rotator cuff syndrome on the limitations of imaging and the risks of ionising radiation exposure. (Grade: Consensus)

Development of a Management Plan

Treatment Principles

Maintain Activity and Participation in Life Areas

Recommendation 7. In established rotator cuff syndrome, maintaining activity within the limits of pain and function should be recommended. Its reported benefits include: earlier RTW; decreased pain, swelling, and stiffness; and greater preserved joint range of motion. (Grade: Consensus)

Shared Decision-making

Recommendation 8. Clinicians should use a shared decision-making process with the injured worker to develop a management plan. (Grade: Consensus)

Outcome Measurement

Recommendation 9. Clinicians should use and document appropriate outcome measures at baseline and at other stages during the recovery process to measure change in the injured worker's impairments, activity limitations, and/or participation restrictions. (Grade: Mandatory)

Cultural and Language Issues

Recommendation 10. Health care providers should consider any additional issues, potential disadvantages, or need for additional resources (such as an interpreter) for the injured worker and their family if the injured worker identifies as Aboriginal and/or Torres Strait Islander, or is from a culturally and linguistically diverse or non-English speaking background. (Grade: Consensus)

Treatment

Pain Management

Medication

Paracetamol

Recommendation 11. Injured workers should be prescribed paracetamol as the initial choice for mild to moderate pain. (Grade: C)

Oral and Topical Non-steroidal Anti-inflammatory Drugs (NSAIDs)

Recommendation 12. Injured workers with acute shoulder pain may be prescribed NSAIDs (either oral or topical) for pain relief. NSAIDs may be prescribed alone or in conjunction with paracetamol. (Grade: B)

Heat/Ice

Cold Therapy

Recommendation 13. To reduce pain and swelling following acute rotator cuff syndrome, injured workers may intermittently apply cold within the first 48 hours. (Grade: Consensus)

Heat

Recommendation 14. From 48 hours post-injury, injured workers may intermittently apply either heat or cold for short periods for pain relief. (Grade: Consensus)

Return to Work Program

Recommendations 15. There must be early contact between the injured worker, workplace, and health care provider. (Grade: C)

Recommendation 16. A specific and realistic goal for the RTW of the injured worker, with appropriate time frames, should be established early with outcomes measured and progress monitored. (Grade: Consensus)

Recommendation 17. The RTW program must involve consultation and engagement with a team which includes: the injured worker, relevant health care providers, and the workplace. (Grade: B)

Recommendation 18. The RTW program should include a workplace assessment and job analysis matching worker capabilities and possible workplace accommodations. (Grade: B)

Recommendation 19. The RTW program, where possible, should be workplace-based. Improved outcomes occur if rehabilitation processes take place within the workplace. (Grade: C)

Recommendation 20. When planning a RTW program, a graded RTW should be considered and adjusted following review of objectively measured outcomes. (Grade: Consensus)

Prescribed Exercise

Recommendation 21. Injured workers should be initially treated with exercise prescribed and reviewed by a suitably qualified health care provider. There is no evidence of adverse impacts for prescribed exercise programs for patients with rotator cuff syndrome. (Grade: B)

Manual Therapy

Recommendation 22. Manual therapy may be combined with prescribed exercise by a suitably qualified health care provider*, for additional benefit for patients with rotator cuff syndrome. (Grade: B)

*Under the New South Wales workers compensation system, health care providers who are eligible to be paid for this treatment are physiotherapists, chiropractors, and osteopaths. These treatment providers are trained in the prescription and modification of exercises consistent with pathology.

Acupuncture

Recommendation 23. Clinicians may consider acupuncture in conjunction with exercise; both modalities should be provided by suitably qualified health care providers. (Grade: C)

Electro-physical Agents

Therapeutic Ultrasound

Recommendation 24. The evidence suggests that therapeutic ultrasound does not enhance outcomes compared to exercise alone. The health care provider should refrain from using ultrasound for either pain reduction and/or increased function for injured workers with subacromial impingement syndrome. (Grade: C)

Review

Recommendation 25. Injured workers with suspected rotator cuff syndrome should be reviewed by their clinician within two weeks of initial consultation, with the proviso that the injured worker can contact their clinician earlier if they have had no response to their prescribed treatment, or if they have experienced treatment side effects. (Grade: Consensus)

Patient Experiencing Significant Persisting Pain and/or Activity Restriction

Preferred Imaging for Rotator Cuff Syndrome

Recommendation 26: Injured workers with suspected rotator cuff syndrome who have experienced significant activity restriction and pain four to six weeks following initiation of an active, non-surgical treatment program and have had no response to the treatment program should be referred for magnetic resonance imaging (MRI) and plain film X-ray. (Grade: B)

Recommendation 27: In the absence of access to MRI or for those with contradictions for MRI, refer injured workers with suspected rotator cuff syndrome for ultrasound and plain film X-ray. Ultrasound performed by a skilled clinician provides equivalent diagnostic accuracy to MRI for rotator cuff tears (partial- or full-thickness). (Grade: B)

Subacromial Injections of Corticosteroids

Recommendation 28. For pain reduction in injured workers with persistent pain or who fail to progress following initiation of an active, non-surgical treatment program, the clinician may consider subacromial corticosteroid injections combined with a local anaesthetic. (Grade: A)

Recommendation 29. Injured workers should be educated regarding the possible risks and benefits of corticosteroid injections. (Grade: Consensus)

Recommendation 30. Subacromial corticosteroid injections should only be administered by suitably trained and experienced clinicians. (Grade: Consensus)

Recommendation 31. If pain and/or function have not improved following two corticosteroid injections, additional injections should not be used. (Grade: Consensus)

Referral for Specialist Opinion

Recommendation 32. Clinicians should refer for specialist opinion if an injured worker experiences significant activity limitation and participation restrictions and/or persistent pain following engagement in an active, non-surgical treatment program for three months. (Grade: Consensus)

Rotator Cuff Tears

Rotator Cuff Surgery

Recommendation 33. On review, clinicians should refer injured workers for surgical opinion if there is a symptomatic, established small or medium full-thickness rotator cuff tear. (Grade: B)

Recommendation 34. Clinicians should refer injured workers for surgical opinion if there is a symptomatic, full-thickness rotator cuff tear greater than 3 centimetres. (Grade: Consensus)

Recovery and Outcomes Following Rotator Cuff Surgery

Recommendation 35. The clinician should be aware of factors that may influence prognosis post-rotator cuff surgery (refer to Table 8 in the original guideline document for factors that may influence recovery following rotator cuff surgery). (Grade: Consensus)

Definitions:

National Health and Medical Research Council (NHMRC) Evidence Hierarchy for Studies

Level	Intervention	Diagnostic Accuracy	Prognosis	Aetiology	Screening Intervention
I	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies
II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among consecutive persons with a defined clinical presentation	A prospective cohort study	A prospective cohort study	A randomised controlled trial
III-1	A pseudo-randomised controlled trial (i.e., alternate allocation or some other method)	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among non-consecutive persons with a defined clinical presentation	All or none	All or none	A pseudo-randomised controlled trial (i.e., alternate allocation or some other method)
III-2	A comparative study with concurrent controls: • Non-randomised, experimental trial • Cohort study • Case-control study • Interrupted time series with a control group	A comparison with reference standard that does not meet the criteria required for Level II and III-1 evidence	Analysis of prognostic factors amongst persons in a single arm of a randomised controlled trial	A retrospective cohort study	A comparative study with concurrent controls: • Non-randomised, experimental trial • Cohort study • Case-control study
III-3	A comparative study without concurrent controls: • Historical control study • Two or more single arm study • Interrupted time series without a parallel control group	Diagnostic case-control study	A retrospective cohort study	A case-control study	A comparative study without concurrent controls: • Historical control study • Two or more single arm study
IV	Case series with either post-test or pre-test/post-test outcomes	Study of diagnostic yield (no reference standard)	Case series, or cohort study of persons at different stages of disease	A cross-sectional study or case series	Case series

Note: Explanatory notes for this table are provided in the original guideline document.

Grades for Recommendation

Grade of Recommendation	Description
A	Body of evidence can be trusted to guide practice.

Grade of Recommendation	Description
	• One or more level I or several level II studies with low risk of bias and all studies consistent, or inconsistencies can be explained. • The clinical impact is very large. • The populations studied in the body of evidence are the same as the target population for the guidelines. • The studies are directly applicable to the Australian health care context.
B	Body of evidence can be trusted to guide practice in most situations. • One or two level II studies with a low risk of bias or a systematic review/several level III studies with a low risk of bias with most studies consistent, or inconsistencies can be explained. • Clinical impact is substantial. • Population studied in the body of evidence is similar to the guideline population. • Applicable to Australian health care context with few caveats.
C	Body of evidence provides some support for recommendation but care should be taken in its application to individual clinical and organisational circumstances. • One or two level III studies with low risk of bias or level I or II studies with a moderate risk of bias. • Some inconsistency reflecting some uncertainty. • Clinical impact is moderate. • Population studied in the body of evidence differs from the guideline population but it is sensible to apply it to target population. • Applicable to Australian health care context with some caveats.
D	Body of evidence is weak and recommendation must be applied with caution. • Level IV studies or level I to II studies/systematic reviews with a high risk of bias. • Evidence is inconsistent. • The clinical impact is slight. • Population studies in the body of evidence differ to target population and hard to judge whether it is sensible to apply it to the target population.
Consensus	Consensus-based recommendation. A systematic review of the evidence was conducted as part of the guideline research strategy. In the absence of high-quality evidence, the working party utilised the literature available in combination with the best available clinical expertise and practices to reach a consensus on the recommendation.

Adapted from the *Guidelines for the prescription of a seated wheelchair or mobility scooter for people with a traumatic brain injury or spinal cord*, 2011.

Mandatory	This recommendation is guided by a regulatory requirement established by a statutory authority (e.g., WorkCover New South Wales).

Clinical Algorithm(s)

The original guideline document includes the following flowcharts:

- First presentation – shoulder pain
- Review (post 4-6 weeks)

Scope

Disease/Condition(s)

Rotator cuff syndrome, specifically degenerative rotator cuff syndrome which has occurred following the performance of work tasks, including:

- Shoulder impingement syndrome

- Subacromial impingement syndrome
- Subacromial bursitis
- Rotator cuff tendonitis
- Rotator cuff tears (partial or full-thickness)

Note: A complete list of International Classification of Diseases (ICD) 9 and 10 codes for the conditions included in these guidelines can be found in Appendix 4 of the original guideline document. The term 'rotator cuff syndrome' is used to encompass these entities. Rotator cuff syndrome refers to the clinical presentation of the injured worker.

Guideline Category

Counseling

Diagnosis

Evaluation

Management

Rehabilitation

Treatment

Clinical Specialty

Chiropractic

Family Practice

Internal Medicine

Orthopedic Surgery

Physical Medicine and Rehabilitation

Psychology

Rheumatology

Sports Medicine

Surgery

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Chiropractors

Health Care Providers

Nurses

Occupational Therapists

Other

Patients

Physical Therapists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Guideline Objective(s)

- To provide recommendations, based on current evidence, which will hopefully improve clinical outcomes for workers, employers and health care providers
- To assist medical practitioners, health care providers, employers, and injured workers to make informed decisions with consideration of the injured worker's personal and environmental contexts to optimise recovery and functioning

Target Population

Working adults age 18–65 years with rotator cuff syndrome which has occurred following the performance of work tasks

Note:

> It is at the discretion of the user of the guidelines whether they apply the guidelines to injured workers aged 16 to 17 and over 65. These age groups are less likely to be represented within the evidence base.
> The guidelines do not examine acute rotator cuff injury related to a major traumatic event or the diagnoses of osteoarthritis of the glenohumeral joint or acromioclavicular joint, subluxation or dislocation of the aforementioned joints, adhesive capsulitis (frozen shoulder) or fractures.

Interventions and Practices Considered

Diagnosis/Evaluation

1. Clinical history
2. Physical examination
3. Identification of red flags
4. Identification of yellow flags
5. X-rays and imaging (not indicated in the first four to six weeks in the absence of 'red flags')

Treatment/Management

1. Maintaining activity within the limits of pain and function
2. Shared decision-making between patient and provider in developing a treatment plan
3. Use and documentation of appropriate outcome measures
4. Consideration of cultural and language issues
5. Pain management
    - Paracetamol
    - Oral and topic non-steroidal anti-inflammatory drugs (NSAIDs)
    - Heat or cold therapy
6. Return to work program
7. Prescribed exercise
8. Manual therapy
9. Acupuncture
10. Therapeutic ultrasound (not recommended)
11. Ongoing regular reviews of treatment
12. Referral for magnetic resonance imaging (MRI) and plain film X-ray in patients who have had no response to the treatment program
13. Subacromial corticosteroid injections combined with a local anaesthetic with patient education about risks and benefits of steroid injection
14. Specialist referral as appropriate
15. Referral for rotator cuff surgery

Major Outcomes Considered

- Diagnostic utility, accuracy, and predictive value of diagnostic tests
- Efficacy/effectiveness of treatments (including measures such as level of pain, range of motion, return of function)
- Rate, degree, and timing of recovery
- Duration of disability
- Likelihood of return to work
- Timing of return to work

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Existing Guidelines

A wide range of organisations were searched for existing guidelines (see Appendix 4 in the technical report [see the "Availability of Companion Documents" field]). Five existing guidelines were identified and appraised.

Clinical Evidence Summaries

While searching for existing guidelines seven evidence summaries were also identified. Evidence summaries are published by databases and provide an evidence-based overview of a health condition for health care professionals.

Published Studies

A systematic search for published studies was conducted for each clinical question. Appendix 6 in the technical report (see the "Availability of Companion Documents" field) lists search terms used. Databases searched include Cochrane, MEDLINE, EMBASE, CINAHL, PEDro, OT Seeker, and where appropriate PsycINFO between January 2000 and March 2012. No methodological filters were used for searching. The guideline has utilised quantitative literature for the development of graded recommendations. Qualitative research informed consensus recommendations where this was available for a specific clinical question. All literature searches were supplemented by the hand searching of bibliographies of identified studies for additional studies.

Inclusion/Exclusion Criteria

The inclusion criteria were:

- Studies examining rotator cuff syndrome (see included diagnoses in the "Disease/Condition[s]" field)
- Studies addressing the clinical questions (assessment methods, treatment outcomes, and return to work [RTW] approaches)
- Studies in English
- Adults (18–65 years of age)
- Human (not cadaveric, animal, or in vitro studies)
- Papers published between January 2000 and March 2012

The exclusion criteria were:

- Studies involving children
- Studies or guidelines in other languages
- Studies published prior to 2000

- Studies examining shoulder instability, adhesive capsulitis, or labral lesions

In some instances, large numbers of papers were identified for specific clinical questions. Where this occurred systematic reviews with meta-analysis were appraised as the first priority. If the reviews were appraised as having low levels of bias, only papers published after the systematic literature review dates were critically appraised.

Additional Inclusion/Exclusion Criteria for Return to Work Literature

The RTW and vocational literature was searched using the following inclusion criteria:

Impairments

- Patients with shoulder pain
- Patients who had undergone shoulder surgery

Activities

Studies which examined work tasks associated with higher incidences of rotator cuff syndrome, including:

- Heavy lifting
- The use of 'high' hand force (greater than or equal to 10% of maximal voluntary contraction) for one hour or more per day
- Repetitive shoulder movements
- Overhead work that required upper arm elevations of greater than 90°
- Use of vibrating tools

Participation

Studies which examined the following occupations:

- Construction workers
- Car assembly workers
- Forestry workers
- Agriculture
- Meat and/or fish processing
- Onerous human services, e.g., cleaners, nurses, personal care assistants

The RTW and vocational literature was searched using the following exclusion criteria:

Impairments

- Combined neck and shoulder pain identified as radiating from the trapezius or described as myalgia

Number of Source Documents

Existing guidelines: Five existing guidelines were identified and appraised.

Clinical evidence summaries: Seven evidence summaries were identified.

Published studies: 223 publications (guidelines, published studies and papers)

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

National Health and Medical Research Council (NHMRC) Evidence Hierarchy for Studies

Level	Intervention	Diagnostic Accuracy	Prognosis	Aetiology	Screening Intervention
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II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among consecutive persons with a defined clinical presentation	A prospective cohort study	A prospective cohort study	A randomised controlled trial
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Note: Explanatory notes for this table are provided in the original guideline document.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Evidence Appraisal

Literature identified in the systematic searches was assessed for relevance and appraised by two reviewers. The following appraisal tools were used:

- Appraisal of Guidelines for Research and Evaluation (AGREE II) – for appraisal of clinical guidelines
- Critical Appraisal Skills Programme (CASP) – for appraisal of systematic reviews and qualitative studies
- Expanded National Health and Medical Research Council (NHMRC) checklist – for quantitative studies
- Partitioned PEDro scale for randomised controlled trial, intervention studies
- Single Case Experimental Design scale (SCED) – for appraisal of single case studies

Grading the Evidence

Appraised evidence was used to develop clinical recommendations. The strength of the body of evidence for each recommendation was determined using the NHMRC grades for recommendations (see the "Rating Scheme for the Strength of the Recommendations" field). The NHMRC grades use a hierarchical model of quantitative research methods where systematic reviews or meta-analysis of randomised controlled trials are considered to be the most robust evidence (see the "Rating Scheme for the Strength of the Evidence" field). All research on which the guidelines recommendations are based, is detailed in the evidence tables (see Section 4 of the technical report [see the "Availability of Companion Documents" field]).

Existing Guidelines

The key recommendations from existing guidelines were documented in an evidence table (see Table 4.1 in the technical report). The identified guidelines were appraised by three independent reviewers using the AGREE II instrument. The AGREE II scores were used to determine whether the existing guidelines would be used to inform the rotator cuff syndrome project. The AGREE scores are detailed in Appendix 5 of the Technical Report.

Clinical Evidence Summaries

The key findings from clinical evidence summaries have been documented in Evidence Table 4.1.1 in the technical report.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The methodology for the development of these guidelines was founded on the National Health and Medical Research Council (NHMRC) *Procedures and requirements to meet the 2011 NHMRC standard for clinical practice guidelines*. It was also informed by two additional documents: the Appraisal of Guidelines for Research and Evaluation (AGREE II) tool, which is an international tool used to assess the quality and reporting of practice guidelines, and the *Guidelines for the prescription of a seated wheelchair or mobility scooter for people with a traumatic brain injury or spinal cord injury*.

Framework

The guidelines are informed by the International Classification of Functioning (ICF) framework for functioning, disability, and health, and the principles of patient-centred care and shared decision-making.

Working Party

A working party consisting of general practitioners, medical specialists, allied health care providers, consumer representatives, and researchers developed the guidelines. Details of working party members can be found in the original guideline document. Experienced guideline development consultants from Lukersmith and Associates were contracted to assist and facilitate the search for and collation of evidence, the appraisal and

presentation of evidence, and technical writing. The working party identified 35 clinical questions of concern to health care providers, injured workers, and employers regarding the management of rotator cuff syndrome (see Appendix 2 of the technical report [see the "Availability of Companion Documents" field]). The guidelines have been developed on the basis of these questions. Working party meetings were held once a month for 11 months.

See Section 2.2 in the technical report (see the "Availability of Companion Documents" field) for more information about the clinical questions.

Consumer Consultation

Consumer consultation was integral to the guideline development process. The working party membership included two consumer representatives. As working party members, the consumer representatives were involved in all aspects of the development of the guidelines including determination of key topics, priorities, clinical questions, and formulation of consensus-based recommendations. The consumer representatives were also involved in the development of the rotator cuff syndrome information sheet for injured workers.

Formulation of Recommendations

At each working party meeting, the evidence which addressed specific clinical questions was reviewed. Where evidence existed to answer the clinical questions, evidence-based recommendations were developed. Where there was insufficient evidence to make evidence-based recommendations, clinical questions were addressed by consensus-based recommendations (where appropriate). The development of consensus-based recommendations involved the research executive developing a draft recommendation for discussion. Where necessary the draft recommendations were modified according to working party discussions. Each draft recommendation was reviewed over a minimum of two working party meetings and were only included in the guidelines once there was unanimous support from working party members.

In determining the grade of each evidence-based recommendation, the body of evidence for each clinical question was determined using the NHMRC matrix as described in the NHMRC Evidence Statement (see Appendix 7 of the technical report [see the "Availability of Companion Documents" field]). The Evidence Statement uses five criteria to rate the body of evidence. These criteria are: the quantity and strength of studies; the consistency of studies; the clinical impact of study results; the generalisability; and the applicability of the body of evidence to the Australian health care context. The grading of each of the guideline's recommendations reflects a synthesis of these five criteria. A summary of the grades ascribed to the body of evidence criteria for each of the evidence-based recommendations within the current guidelines is provided in Table 4 of the Technical Report.

Existing Guidelines

Findings from three of the existing published guidelines were incorporated into the *Clinical Practice Guidelines for the Management of Rotator Cuff Syndrome in the Workplace*. The three guidelines were:

- American Academy of Orthopaedic Surgeons, Clinical Practice Guideline on the Diagnosis and Treatment of Osteochondritis Dissecans (2010).
- Diagnostic imaging guideline for musculoskeletal complaints in adults – an evidence-based approach: Part 2: Upper extremity disorders (2008).
- Work Loss Data Institute: Official Disability Guidelines (ODG 2011), Shoulder and Rotator Cuff Disease.

Recommendations from the guidelines were discussed within the working party, and those that were deemed applicable for inclusion in the *Clinical Practice Guidelines for the Management of Rotator Cuff Syndrome in the Workplace* were adapted using the ADAPTE tool*.

*ADAPTE is a tool developed by Guidelines International Network to consider the use or modification of existing guidelines produced in one cultural and organisational setting for application in another context.

Clinical Evidence Summaries

Key studies from identified clinical evidence summaries were incorporated into the evidence base for specific clinical questions as appropriate.

Rating Scheme for the Strength of the Recommendations

Grades for Recommendation

Grade of Recommendation	Description
A	Body of evidence can be trusted to guide practice.

Grade of Recommendation	Description
	• One or more level I or several level II studies with low risk of bias and all studies consistent, or inconsistencies can be explained. • The clinical impact is very large. • The populations studied in the body of evidence are the same as the target population for the guidelines. • The studies are directly applicable to the Australian health care context.
B	Body of evidence can be trusted to guide practice in most situations. • One or two level II studies with a low risk of bias or a systematic review/several level III studies with a low risk of bias with most studies consistent, or inconsistencies can be explained. • Clinical impact is substantial. • Population studied in the body of evidence is similar to the guideline population. • Applicable to Australian health care context with few caveats.
C	Body of evidence provides some support for recommendation but care should be taken in its application to individual clinical and organisational circumstances. • One or two level III studies with low risk of bias or level I or II studies with a moderate risk of bias. • Some inconsistency reflecting some uncertainty. • Clinical impact is moderate. • Population studied in the body of evidence differs from the guideline population but it is sensible to apply it to target population. • Applicable to Australian health care context with some caveats.
D	Body of evidence is weak and recommendation must be applied with caution. • Level IV studies or level I to II studies/systematic reviews with a high risk of bias. • Evidence is inconsistent. • The clinical impact is slight. • Population studies in the body of evidence differ to target population and hard to judge whether it is sensible to apply it to the target population.
Consensus	Consensus-based recommendation. A systematic review of the evidence was conducted as part of the guideline research strategy. In the absence of high-quality evidence, the working party utilised the literature available in combination with the best available clinical expertise and practices to reach a consensus on the recommendation.

Adapted from the *Guidelines for the prescription of a seated wheelchair or mobility scooter for people with a traumatic brain injury or spinal cord*, 2011.

Mandatory	This recommendation is guided by a regulatory requirement established by a statutory authority (e.g., WorkCover New South Wales).

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

External Review

The draft guidelines were widely circulated to 21 key stakeholder organisations and/or individuals for review and comment in September 2012 (see Table 2 in the technical report [see the "Availability of Companion Documents" field]). All comments received were discussed and considered by the research executive and incorporated into the final document where appropriate.

Consumer Consultation

Consumer input was also sought from key consumer and stakeholder organisations during the peer review process. All comments received were considered in the final editing stage of the guidelines.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (also see Table 4 in the Technical Report [see the "Availability of Companion Documents" field]).

The guideline has utilised quantitative literature for the development of graded recommendations. Qualitative research informed consensus recommendations where this was available for a specific clinical question.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Appropriate management of rotator cuff syndrome in the workplace
- Adopting best practice methods to the diagnosis and management of rotator cuff syndrome, including management at the workplace, will assist the injured worker to recover, promote minimal disruption to the injured worker's activities and participation, and reduce the potential for longer term disability.

Potential Harms

- *X-ray imaging*. Plain film X-rays use low levels of ionising radiation and although controversial, it is important to remember that health hazards of all forms of radiation are cumulative. The Biological Effects of Ionizing Radiation (BEIR VII) 2005 report released by the United States National Academy of Sciences concludes that ionising radiation is dangerous even at low doses and that there are no safe limits. The potentially serious consequences of radiation should be considered and the injured worker advised of the risks to allow educated and informed consent before radiography is undertaken.
- *Paracetamol*. In a Cochrane review, the rate of adverse effects from a single dose of paracetamol was found to be comparable to placebo. Paracetamol is widely considered to have fewer side effects than other analgesic medication, for example non-steroidal anti-inflammatory drugs (NSAIDs) and can be used when the latter are contraindicated (e.g., patients with a history of asthma, renal disease, hypertension, or peptic ulcers).
- *NSAIDs*. There are documented adverse effects associated with NSAIDs such as gastrointestinal symptoms, exacerbation of chronic renal impairment, inhibition of platelet function, skin rash, headache, and possible cardiovascular effects. These side effects are more common with long-term use. Cyclooxygenase (Cox)-1 and Cox-2 NSAIDs have been associated with similar rates of adverse cardiovascular effects, although gastrointestinal complications have been found to be less likely with Cox-2 drugs.
- *Topical NSAIDs*. Reported adverse effects have included local skin reactions which were generally mild and transient, and did not differ from placebo. There were very few systemic adverse events compared to oral NSAIDs.
- *Icing*. Ice taken from the domestic freezer may be below freezing point and if applied directly to the skin may cause tissue damage and frostbite. Reflex activity and motor function are also thought to be impaired following icing, so patients may be more susceptible to injury for up to 30 minutes following treatment.
- *Subacromial injections of corticosteroids*. Although most side effects are rare and temporary, skin atrophy and depigmentation can be permanent and should be explained to the patient before performing an injection. There is strong evidence to conclude that the risks of serious adverse effects such as tendon rupture and infections after steroid injections are small.
- *Rotator cuff surgery*. There are some minimal risks associated with surgery for rotator cuff. They include: infection, post-surgical adhesions with loss of motion, damage to the deltoid from the surgical approach, injury to the axillary nerve, and damage to the coracoacromial arch from acromial resection, leading to anterosuperior escape.

Contraindications

Contraindications

- Non-steroidal anti-inflammatory drugs (NSAIDs) are contraindicated in patients with a history of asthma, renal disease, hypertension or peptic ulcers.
- Contraindications for extracorporeal shockwave therapy include pregnancy, cardiac pacemakers, or anticoagulant medications.
- Relative or absolute contraindications for magnetic resonance imaging (MRI) scans are:
    - Metal implants (e.g., a pacemaker)
    - Claustrophobia
    - Pregnancy

Qualifying Statements

Qualifying Statements

- Clinical practice guidelines are bound by the same limitations as all research. As such, these guidelines are offered to assist health care providers, workers, and employers achieve the best outcome from rotator cuff syndrome. Clinical practice guidelines inform and guide but do not replace clinical reasoning or clinical judgment.
- *Consideration of resources*: In developing the recommendations for these guidelines the working party considered the possible resource implications of individual recommendations such as those involving diagnostic imaging, surgery, and return to work. In the case of imaging, emphasis was placed on highlighting the limitations of imaging and identifying criteria for when imaging was deemed to be necessary. Access limitations in rural and remote areas to imaging techniques such as magnetic resonance imaging (MRI) was noted by the working party. It was also recognised that efficient use of imaging could potentially lead to cost savings.

Implementation of the Guideline

Description of Implementation Strategy

Implementation

The following strategies will be undertaken to disseminate the guidelines:

1. A summary of the guidelines will be submitted for publication in a relevant, peer-reviewed journal (e.g., *Implementation Science* or *Journal of Evaluation in Clinical Practice*).
2. The completed guidelines and resource material are posted on the University of New South Wales (UNSW) Web site .
3. Published copies of the guidelines and the UNSW hyperlink for electronic copies will be circulated to key organisations for dissemination to their members.
4. Published copies and the UNSW hyperlink for electronic copies will be forwarded to all members of the working party, expert advisory panel, and public peer reviewers.
5. Guidelines will be presented at relevant conferences and/or meetings of professional associations.

It will also be suggested that Essential Energy develop a detailed implementation plan for implementation within their organisation. This plan would include monitoring and auditing criteria to assess the impact of the guidelines.

Implementation Tools

Clinical Algorithm

Patient Resources

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Hopman K, Krahe L, Lukersmith S, McColl AR, Vine K. Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. Port Macquarie (Australia): University of New South Wales; 2013. 80 p. [223 references]

Adaptation

Findings from three existing published guidelines were incorporated into the Clinical *Practice Guidelines for the Management of Rotator Cuff Syndrome in the Workplace*. The three guidelines were:

- American Academy of Orthopaedic Surgeons, *Clinical Practice Guideline on the Diagnosis and Treatment of Osteochondritis Dissecans* (2010).
- "Diagnostic imaging guideline for musculoskeletal complaints in adults – an evidence-based approach: Part 2: Upper extremity disorders" (2008).
- Work Loss Data Institute: Official Disability Guidelines (ODG 2011), Shoulder and Rotator Cuff Disease.

Recommendations from the guidelines were discussed within the working party, and those that were deemed applicable for inclusion in the *Clinical Practice Guidelines for the Management of Rotator Cuff Syndrome* in the Workplace were adapted using the ADAPTE tool.

Date Released

2013

Guideline Developer(s)

University of New South Wales - Academic Institution

Source(s) of Funding

These guidelines were made possible by a grant from Essential Energy. Essential Energy has not been involved at any stage in the guideline development process, method, writing, or review of the guidelines. As the guidelines were developed in complete isolation of the funding body, their views or interests have not influenced the recommendations or the guidelines.

Guideline Committee

Clinical Practice Guidelines Working Party

Composition of Group That Authored the Guideline

Working Party Members: Dr David Allen, Occupational & Environmental Physician, Private Practice; Dr Roslyn Avery, Rehabilitation Physician, Private Practice; Mr Greg Black, Consumer Representative, Self Employed – Trade Industry; Mr Patrick Frances, Consumer Representative, Volunteer Worker; Ms Kate Hopman, Independent Guideline Development Expert, Lukersmith & Associates; Dr Lee Krahe, Head of Research, Port Macquarie Campus, Rural Clinical School, UNSW; Dr Yong Hian Liaw, Orthopaedic Surgeon, Port Macquarie Base Hospital and Private Practice; Ms Sue Lukersmith, Independent Guideline Development Expert, Lukersmith & Associates; Dr AR (Sandy) McColl, (*Chairperson*), General Practitioner, Head of Campus, Private Practice, Port Macquarie Campus, Rural Clinical School, UNSW; Dr Christopher Needs, Rheumatologist, Private Practice, Royal North Shore Hospital; Mr Jeremy Rourke, Physiotherapist, Port Macquarie Base Hospital; Mr John Scullin, Physiotherapist, Private Practice; Ms Amy Vallentine, Occupational Therapist, Private Practice; Ms Kris Vine, Research Officer, Port Macquarie Campus, Rural Clinical School, UNSW; Dr Stephen Young, General Practitioner, Private Practice

Financial Disclosures/Conflicts of Interest

All individuals whose names appear as authors or contributors to these clinical practice guidelines provided full written disclosure of any real or perceived conflict of interest prior to participating in the working party (see Appendix 3 of the technical report [see the "Availability of Companion Documents" field]). Each person was obliged to report any real or perceived conflict of interest (should it have arisen) during the guideline development process.

Guideline Endorser(s)

Australian Physiotherapy Association - Medical Specialty Society

Australian Rheumatology Association - Professional Association

Royal Australian and New Zealand College of Radiologists - Professional Association

Royal Australian College of General Practitioners - Professional Association

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the University of New South Wales Rural Clinical School Web site .

Availability of Companion Documents

The following are available:

- Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. Technical report. Port Macquarie (Australia): University of New South Wales; 2013. 96 p. Electronic copies available in Portable Document Format (PDF) from the University of New South Wales (UNSW) Rural Clinical School Web site .
- Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. General practitioner guide – return to work. Port Macquarie (Australia): University of New South Wales; 2013. 2 p. Electronic copies available in PDF from UNSW Rural Clinical School Web site .
- Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. Employer guide – return to work. Port Macquarie (Australia): University of New South Wales; 2013. 2 p. Electronic copies available in PDF from UNSW Rural Clinical School Web site .

Patient Resources

The following is available:

- Clinical practice guidelines for the management of rotator cuff syndrome in the workplace. Rotator cuff syndrome information sheet. Port Macquarie (Australia): University of New South Wales; 2013. 2 p. Electronic copies available in Portable Document Format (PDF) from the University of New South Wales Rural Clinical School Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on September 9, 2013. The information was verified by the guideline developer on October 7, 2013. This summary was updated by ECRI Institute on September 18, 2015 following the U.S. Food and Drug Administration advisory on non-aspirin nonsteroidal anti-inflammatory drugs (NSAIDs).

Copyright Statement

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